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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,983	12/21/2004	Johan Samuel Van Den Brink	PPHNL020538US	7054

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EXAMINER

SHIPMAN, JEREMIAH E

ART UNIT PAPER NUMBER

2859

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/518,983	Applicant(s) VAN DEN BRINK, JOHAN SAMUEL	
	Examiner Jeremiah Shipman	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>21 December 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 9 is objected to because of the following informalities: It is not completely clear what is meant by the limitation "the RF coils of said first and second pair, respectively, are juxtaposed". Is the first coil of the first pair adjacent to the first coil of the second pair? Or are the two coils of the first pair adjacent to one another? Clarification is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4 and 5 are rejected under 35 USC 112, second paragraph.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the

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claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 4 recites the broad recitation "8 RF coils arranged in the shape of a ring", and the claim also recites "in particular forming a birdcage head coil arrangement" which is the narrower statement of the range/limitation. Claim 5 recites the broad recitation "the principle axes for sensitivity encoding" and the claim also recites "in particular the anterior-posterior and left-right axes" which is the narrower statement of range/limitation.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoshino (US 5,122,749). Hoshino describes a MRI apparatus and method (col 1, lines 5-9) comprising M RF coils for detection RF signals from a region of

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interest (col 2, lines 37-46) and N receiver channels for receiving and processing the detected RF signals, N an integer larger than 1 and smaller than M (col 2, lines 55-60; fig 1; **32a**, **32b**), wherein said at least two RF coils are selected so as to provide maximum spatially varying coil sensitivities along the principal axis for coil sensitivity encoding (col 3, lines 14-25; figs 1,3—this configuration provides the maximum possible spatial variation given the constraints of the system (2 receiver channels, and a one dimensional array of coils)).

6. Claims 1-3 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Heelsbergen (US 5,861,749).

Regarding claims 1 and 11, Van Heelsbergen describes a method and apparatus for MRI (col 1, lines 7-17) comprising M RF coils **33** for detecting RF signals from a region of interest, M being an integer larger than two, and N receiver channels **49**, N being an integer larger than one and smaller than M, wherein at least two RF coils are combined for reception of RF signals of said RF coils with a single receiver channel (col 2, lines 15-30; col 4, lines 46-48), wherein said at least two RF coils are selected so as to provide maximum spatially varying coil sensitivities along the principle axis of for coil sensitivity encoding (the configuration depicted in e.g. Fig 3 has maximum spatially varying coil sensitivities given the constraints of the system (one dimensional array and 3 receiver channels)).

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Regarding claim 2, Van Heelsbergen teaches that pairs of two RF coils are each combined and connected to a separate receiver channel, wherein at least one RF coil is not combined with any other RF coil (col 4, lines 60-65).

Regarding claim 3, Van Heelsbergen teaches the RF coil system comprising 8 RF coils, wherein 6 receiver channels are provided and wherein pairs of two RF coils are each combined for reception of RF signals of said pairs of RF coils with two separate receiver channels, respectively (col 4, lines 60-65; also in col 1, lines 35-38, Van Heelsbergen states that his invention is intended to include configurations with more than six RF coils (e.g. eight)).

7. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Visser et al. (US 6,870,368; filed 5 February 2002).

Regarding claims 1 and 11, Visser et al. discuss a method and apparatus for MRI (col 1, lines 8-11) comprising M RF coils **21-28** for detecting signals from a region of interest, M being an integer larger than 2, and N receiver channels **C₁-C₄** for receiving and processing the detected RF signals, N being an integer larger than one and smaller than M (col 1, lines 57-62; Figs 3-7), wherein at least two RF coils are combined for reception of RF signals of said RF coils with a single receiver channel (col 2, lines 52-55; figs 3-7), wherein said RF coils are selected so as to provide maximum spatially varying coil sensitivities along the principle axis for coil sensitivity encoding (col 2, lines 13-18; col 3, lines 11-24; col 4 lines 20-62; col 5, lines 45-48).

Regarding claim 2, Visser et al. further discuss pairs of coils each combined and connected to a separate receiver channel, wherein at least one RF coil is not combined with any other coil (col 3, lines 18-24; col 5, lines 14-21).

Regarding claim 3, Visser et al. discuss an RF coil system comprising 8 RF coils (col 3, lines 4-10, figs 5-6), wherein 6 receiver channels are provided (col 1, lines 41-47; col 4, lines 54-63; col 6, lines 24-29) and wherein pairs of two RF coils are each combined for reception of said pairs of RF coils with two separate receiver channels respectively (col 2, lines 52-55; col 4, lines 54-63).

Regarding claim 4, Visser et al. teach 8 RF coils arranged into the shape of a ring, and a birdcage coil (col 3, lines 4-10; fig 5-6).

Regarding claim 5, Visser et al. teach two pairs of RF coils are each combined, which are arranged obliquely to the principle axes for sensitivity encoding, and in the A-P and L-R axes (col 4, lines 20-62).

Regarding claims 6-10, Visser et al. teach the RF coils of a first pair arranged parallel to one another and the RF coils of a second pair arranged parallel to one another and orthogonally to the first pair; the first pair being orthogonal to one another, the coils of the second pair being arranged orthogonally to one another, and each of the RF coils of the second pair being arranged parallel to one coil of the first pair; and the coils of the first pair arranged parallel to the principle axis of sensitivity encoding and the coils of the second pair arranged obliquely to the principal axis of sensitivity encoding; and the coil pairs being adjacent or parallel to one another (Figs 3-6).

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The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1 and 7 are rejected on the ground of nonstatutory double patenting over claims 8 and 16 of U. S. Patent No. 6,870,368 since the claims, if

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allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: Claims 8 and 16 of the patent describe an apparatus and method, respectively, for MRI (line 1 of the parent claims 1,9 in the patent) comprising an RF coil system comprising M RF coils for detecting RF signals from a region of interest, M being an integer larger than 2 (lines 2-4 of the patent claims 1 and 9), and N receiver channels for receiving and processing the detected RF signals, N being an integer larger than 1 and smaller than M (lines 5-6 of the patent claims 1 and 9), wherein at least two RF coils are combined for reception of RF signals of said RF coils with a single receiver channel (final two lines of the patent claims 1 and 9), wherein said at least two RF coils are selected so as to provide maximum spatially varying coil sensitivities along the principle axis for coil sensitivity encoding (claims 8 and 16 of the patent, lines 1-4).

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

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Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Boskamp (US 6,825,660) teaches the use of a birdcage coil with the SENSE technique. Bernstein (US 6,597,173) teaches a system for adapting a number of RF coils to a smaller number of receiver channels.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah Shipman whose telephone number is (571)272-8439. The examiner can normally be reached on Monday-Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571)272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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